



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,723	02/05/2004	James David Hensley	10011536-2	8315

7590 08/22/2007  
HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P. O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER
----------

NORRIS, JEREMY C

ART UNIT	PAPER NUMBER
----------	--------------

2841

MAIL DATE	DELIVERY MODE
-----------	---------------

08/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/773,723	<b>Applicant(s)</b> HENSLEY ET AL.	
	<b>Examiner</b> Jeremy C. Norris	<b>Art Unit</b> 2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 May 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 8-20 and 22-42 is/are pending in the application.
- 4a) Of the above claim(s) 8-13 and 22-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-20, 36 and 37 is/are rejected.
- 7) ☒ Claim(s) 38-42 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

The drawings were received on 29 May 2007. These drawings are acceptable.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14, 15, 17-20, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,430,611 (Patel) in view of US 5,324,569 (Nagesh) and US 5,160,269 (Fox).

Patel discloses, referring primarily to figure 1, an assembled substrate, comprising a substrate (11) having a first side and a second side, and an electrical contact area on said first side; an electrical component (13) having a plurality of leads (15) attached to said electrical contact area of said substrate; and a uniform force bolster plate attached to said second side of said substrate opposite said electrical contact area of said substrate, wherein said uniform force hydrostatic bolster plate includes: a biasing means (21), and a hollow plate (27) to enclose said biasing means, wherein hollow plate is open on one side. Patel does not specifically state that the leads comprise pins and the contact area comprises pads. However, it is well known in the art to use solder pins on a component and conductive pads on a substrate to attach said component and said substrate together as evidenced by Nagesh (abstract, figure 2 and col. 2, lines 55-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use solder pins and conductive pads on the component and substrate respectively in the invention of Patel as is known in the art and evidenced by Nagesh. The motivation for doing so would have been to provide a reliable electromechanical connection. Additionally, modified Patel does not specifically disclose that the biasing means is a bladder with a material inside wherein the bladder conforms to a surface of the substrate [claim 14]. Instead, Patel generically states that the biasing means can be any conventional means (col. 4, line 65

Art Unit: 2841

– col. 5, line 5). Fox teaches using a bladder (58), filled with a material (60) for creating a mechanical bias on an electrical component (24), wherein the bladder conforms to the surface of the electrical component (col. 7, lines 1-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use the filled bladder of Fox as the biasing means in the invention of Patel. The motivation for doing so would have been to use a biasing means that has an even distribution of force (Fox, col. 2, lines 40-55) to reduce the chance of stress cracks. Additionally, the twice-modified invention of Patel teaches wherein the substrate is a multi-chip module (Patel col. 4, lines 15-20) [claim 15], wherein said material of said bladder incorporates a substantially non-compressible liquid (Fox col. 6, lines 1-5) [claim 18], wherein said bladder is made from an impermeable elastomeric plastic (Fox col. 6, lines 5-15) [claim 19], wherein the bladder has a height that extends above a height of the hollow plate before the hollow plate is attached to the substrate (Fox figure 8) [claim 36], wherein the bladder conforms to the surface of the substrate after the hollow plate is attached to the substrate (Fox col. 7, lines 1-25).

Regarding claim 17, the twice-modified invention of Patel does not specifically teach that the uniform force hydrostatic bolster plate includes a hollow plate fabricated from a material selected from a group of materials consisting of: a stainless steel alloy, a powder-coated spring steel alloy, a plated spring steel alloy, a painted spring steel alloy, a titanium steel alloy, a magnesium alloy, an aluminum alloy, or a plastic [claim 17]. However, it is well known in the art to use an aluminum alloy for the material for a base plate as evidenced by Fox (col. 5, lines 1-10). Therefore, it would have been

Art Unit: 2841

obvious to one of ordinary skill in the art at the time the claimed invention was made to use aluminum alloy as the material of the base plate in the twice-modified invention of Patel as is known in the art and evidenced by Fox. The motivation for doing so would have been to use a material that is strong, yet light.

Regarding claim 20, the twice-modified invention of Patel teaches the claimed invention as described above except Patel in view of Nagesh and Fox does not specifically disclose that the material inside said bladder is selected from a group of materials consisting of: water, a glycol solution, an oil mixture, a water-based gel, or an oil-based gel [claim 20]. Instead, Fox generically states that the fluid is an incompressible fluid (col. 2, lines 40-55). However, the Examiner takes Official Notice that water is a well known incompressible fluid. Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use water as the incompressible fluid in the invention of Patel in view of Nagesh and Fox. The motivation for doing so would have been to use a relatively inexpensive and readily obtainable material. Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel in view of Nagesh and Fox as applied to claim 14 above, and further in view of US 6,791,846 B2 (Smith).

The modified invention of Patel teaches the claimed invention as described above except the modified invention of Patel does not specifically teach that said component is a land grid array (LGA) component [claim 16]. Patel teaches that the component is "mounted on the substrates by means of solder bumps 15 or the like" (col. 4, lines 20-30). However, it is well known in the art to use LGA connections instead of soldered connections in devices that generate considerable amounts of heat as evidenced by Smith (col. 4, line 65 – col. 5, line 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use an LGA connection in place of the solder connections in the modified invention of Patel as is known in the art and evidenced by Smith. The motivation for doing so would have been to eliminate the chance of an electrical connection failure during operation due to solder reflow.

***Allowable Subject Matter***

Claims 38-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 38 states the limitation "further comprising: a socket disposed on the substrate, wherein the electrical component is disposed on the socket". This limitation, in conjunction with the other claimed features, was neither found to be disclosed in, nor suggested by, the prior art. Claim 39 states the limitation "wherein bladder physical

Art Unit: 2841

dimensions for the bladder are estimated and plate physical dimensions for the hollow plate are estimated, based upon a predicted uniform load from a clamping force that is applied to the component and the substrate that is coupled to the component and the hollow plate". This limitation, in conjunction with the other claimed features, was neither found to be disclosed in, nor suggested by, the prior art.

### ***Response to Arguments***

Applicant's arguments with respect to claims 14-20, 36, and 37 have been considered but are moot in view of the new ground(s) of rejection. However, the Examiner notes that Applicant suggest that a bladder cannot both provide a biasing force as well as conform to a surface of a substrate, yet this is exactly the situation described by Fox (col. 7, lines 1-25). Hence, such an argument is not well taken.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



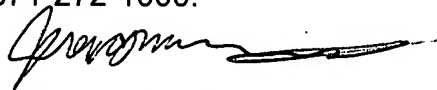
Art Unit: 2841

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeremy C. Norris  
Patent Examiner - Technology  
Center 2800  
Art Unit 2841

JCSN